HANDBOOK FOR WRITING
NASA RESEARCH SOLICITATIONS
FOR THE OFFICE OF SPACE SCIENCE

GOOD THINGS TO KNOW
BEFORE STARTING TO WRITE
A RESEARCH SOLICITATION

…OR…

ZEN* AND THE WRITING OF AO'S, NRA'S, AND CAN'S

* **Zen:** *…being for the enlightenment of the student by the most direct possible means, accepting formal studies and observances only when they form part of such means…"*
—– RANDOM HOUSE DICTIONARY,
2ND EDITION, UNABRIDGED

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Preface

This Handbook has been prepared to aid the executive program staff members of the Office of Space Science (OSS) at NASA Headquarters to write, edit, and implement through to their public release the various kinds of research solicitations used to carry out approved OSS programs. It attempts to summarize several decades of experience and knowledge, learned through considerable discomfort, chagrin, and, yes, occasional pain.

This Handbook had its modest origins as a relatively simple list of do's-and-don'ts that formed the basis for its Section 3. However, during the course of reviewing many different solicitations of all types over a period of more than five years I realized that guidance was needed for more than just the minutiae of grammar and formats. This realization led to the creation of the first two sections of this document –with Section 1 focusing on the more legalistic and formal aspects of the solicitation processes, and Section 2 addressing the more practical "where-the-rubber-meets-the-road" types of issues. Section 4 started out as just one of the "frequently asked questions" (FAQ's) that are now collected in Appendix D, but took on a life of its own as a rather extensive table that compares and contrasts the major characteristics of the various types of research solicitations. In doing so, it essentially covers many of the FAQ's that have been asked over the years (or, regrettably, that <u>should</u> have been asked). Appendices A, B, and C are self explanatory in nature.

Admittedly, such "corporate knowledge" can be tedious to read and assimilate. Therefore, since this Handbook is strictly meant for internal use by the OSS staff it has been purposely written in a bit of an irreverent style that hopefully will minimize the pain of reading it for the novice who is assigned to write a solicitation for the first time, while perhaps providing a bit of amusement to those more experienced staff members who are refreshing their memories of the trials and tribulations of developing a research solicitation.

> *DISCLAIMER: In the event of any conflict of the material in this Handbook with any provision of any NASA Policy Guide (NPG) or NASA FAR Supplement (NFS), that NPG or NFS takes precedence.*

As a final note: Since this document is not a formal NASA publication of any kind, it may be reproduced, distributed, and/or amended by anyone at any time. However, ignore it at your own peril.

– J. D. Bohlin
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1.0 GENERAL PRINCIPLES, BOTH LEGAL AND PRACTICAL

1.1 The Most Important Commandment: "Don't Surprise the Boss" (AKA: the Selecting Official). Not infrequently, especially when you are writing a new type of solicitation, the temptation arises to become particularly "creative' (for want of a better word) by introducing some new feature or "way of doing business" into the process because it seems like "*…the right (or expedient, or desirable, or whatever) thing to do*." Now this, in itself, is not necessarily undesirable or wrong. After all, creativity and imagination are part of what makes this a great country. Where the difficulty can arise, and has (….*sigh*), is when this new approach or feature is not particularly known and/or understood by the Selecting Official who may find him/herself faced with an awkward if not untenable situation concerning the boundary conditions within which the selections must be made (see especially §'s1.2, 1.3, 1.6, 2.1, 2.13, and 2.14 that follow below). Therefore, make sure the Upper Management knows and approves of any new or unusual features before the solicitation is thrust upon them for final signature!

1.2 Key Operational Principle I: Yes, There Really are Formal Rules and Regulations Behind All of This. As a U.S. agency, NASA is legally required to procure all needed goods and services in compliance with the U.S. Code entitled Federal Acquisition Regulations (FAR). A unique formulation of FAR, called the NASA FAR Supplement (NFS), specifies how NASA must solicit and select science investigations, where the term "investigation" means the orderly pursuit of knowledge and understanding about natural phenomena and/or the development of new technologies through the analysis of data and publication of results, which may or may not involve the construction, launch, and operation of space experiment hardware. Therefore, a NASA research solicitation always emphasizes that proposals are sought for "investigations" and not just for "instruments" or "experiments." If all that is sought is a certain piece of hardware or data base then the appropriate solicitation to be used is a Request for Proposal (RFP) that is based on "design" specifications, whereas in essence NASA's OSS research solicitations are based on "performance" specifications.

1.3 Key Operational Principle II: NASA Solicitations are for "Investigations" and Not Just Hardware, and Don't Ever Forget It. A corollary to the first principle above is that a NASA research solicitation must stress that the end result of the program that is being advertised is the acquisition of new knowledge through the performance of investigations about the natural phenomena of the cosmos, or the development of technology that will enable investigations about the natural phenomena of the cosmos. To the maximum extent possible just how that new knowledge may be achieved should be left as an exercise for the proposers, which is the essence of what is meant by "basic research." An effective way of conveying this point is for the solicitation to stress that a proposal must demonstrate direct linkage from its proposed science or technology objectives, through the proposed execution of the investigations (which may involve space flight of proposed hardware), and finally to the analysis of the data that are expected to be acquired; that is, any flight hardware and its mission operations are the means to an end of an investigation and not the end itself.

1.4 On Using a Previous Solicitation as a Model for a New One: As Ancient Maps Would Sometimes Say, '*Take Fair Warning, Me Lads and Lassies – There Be Dragons*'. It is permissible and even desirable to use a previous solicitation as a guide for writing a new one. However, the author of the solicitation is cautioned not to assume that, just because an earlier solicitation was approved and released, its text and/or organization may be slavishly copied with the expectation that no one will criticize or require changes. The cruel fact is that any solicitation older than a year (and sometimes as little as a few months!) is probably outdated in some ways. Nor there is any guarantee that those who reviewed that previous document will review the new one, or even if they do, that their standards and/or knowledge of what to say and how to say it will be the same. Therefore, even if using an older solicitation as a guide, always use common sense and judgment to make the new text and its organization as clear, logical, and definitive as possible. If you do not particularly understand something, or feel that material is not well organized, chances are 100% that some potential proposer will have the same difficulty. The basic rule to always keep in mind is that if something in a solicitation can be misinterpreted, it will be misinterpreted, and it is always in NASA's best interests to release the most understandable and least ambiguous solicitation as possible.

1.5 Yes, Virginia, There is 'Controlling Legal Authority' for All This, and It Is Not Santa Claus. NASA's program solicitations are in fact legal documents authorized by the NFS that requires them to meet certain standards for organization and content. Therefore, the author of a solicitation is urged to understand these requirements before starting to write and not have to learn them by a rather painful, time-consuming random-walk process during the solicitation's formal review. For the NRA, the reference is NFS Part 1835.016-70 and for the AO, it is NFS Part 1872. However, for the CAN, there is no NFS guidance; it falls in the category of being an "other form" of Broad Agency Announcement as authorized by NFS 1835.016(a)(i)(c). From an operational point of view, the practical definition of a CAN is best found in the *Grants and Cooperative Agreements Handbook* (14 CFR Parts 1260 & 1274 found at http://ec.msfc.nasa.gov/hq/grcover.htm). Therefore, owing to its nominal lack of definition, a CAN may be structured pretty much at the discretion of the sponsoring program office, but in the last analysis it must define a program for which "… *it is anticipated there will be substantial NASA involvement during performance of the effort*" (see GCAH Part 1260.51, "Cooperative agreement special condition"). The other key standard a CAN must meet is, can someone who has never seen it before in fact read it and understand what NASA wants by way of proposals?

1.6 The Research Solicitation as Viewed from an "Operational" Point of View: NASA Promises Certain Things, and the Proposers Promise Certain Things. Another useful perspective when trying to write a solicitation of any kind is to think of it as a *de facto* "contract" between NASA and the community of proposers. For its part, it is NASA's responsibility to release an easily understood, self-consistent, and complete solicitation; to conscientiously and accurately review all appropriately formatted and complete proposals that address the stated program objectives; and then to select and fund the best proposals as determined by the published evaluations criteria and processes. It is the proposer's responsibility to submit proposals that are compliant with the

requirements of the solicitation and, if they are selected, to complete their proposed investigations on time and within the finally agreed budget.

1.7 The Need for Clarity and Fairness for All Interested Proposers: It's Not Just a Matter of Good Manners. A solicitation should never be an exercise in *"Guess what NASA is thinking*?" Its intent and provisions should be absolutely clear to any intelligent reader and not just those who may be familiar with NASA solicitations and/or the program being offered and, therefore, *"know what to do and what it's all about."* It is especially important to never issue a solicitation that is truly understandable only by those having privileged knowledge by virtue of their prior participation in the definition of the program, for example, through a NASA-sponsored science working group or advisory committee. Such a solicitation would not only be unfair, in the last analysis it would probably be judged as invalid.

1.8 On the Sanctity of the *Guidebook for Proposers Responding to a NASA Research Announcement (NRA)* for guidance on writing an NRA …or… Why It's Not Nice to Deviate From That Which Has Been Officially Approved and Blessed. From mid 1998 through 2002 a substantial amount of time and effort was devoted at NASA Headquarters to writing and vetting the *Guidebook for Proposers...to [an] NRA*, the most recent edition of which may always be accessed at http://www.hq.nasa.gov/office/procurement/nraguidebook/. It has been formally concurred on for use by the Associate Administrators of every program office in Headquarters that issues NRA's (namely, E, F, N, R, S, U, and Y), as well as those that are formally charged with concurrence authority on such solicitations before they are released (viz., G, H, and I). Although this *Guidebook* is nominally written for the proposer to use, it contains copious material that governs the structure of the solicitation itself; therefore, careful adherence to those principles will help ensure a swift approval of a new NRA, whereas deviations from them may lead to great difficulties. This admonition is especially true when contemplating changes to the requested contents of the proposals (as discussed in its Chapter 2) or to the evaluation criteria (see its Section C.2). Bottom line: the *Guidebook for Proposers* can be of enormous value in writing a complete NRA that conforms with required standards; use it.

2. LESSONS FROM THE REAL-WORLD

2.1 Yes, Writing and Implementing a Solicitation Takes Time, Lots and Lots of It, and No, There Aren't Any Magic Shortcuts (Although Experience Does Help, a Lot). Never underestimate the time it takes to write a solicitation and shepherd it through its Concurrence Cycle leading to final approval, especially if it is the first of its kind. Start early and confer often with the OSS staff who will be asked to approve the document. In addition, if any issues are suspected at all as possibly being divergent with NFS policies and/or NASA accepted practices, also confer as appropriate with Code H (Procurement), Code I (External Relations), and/or Code G (General Counsel), each of which is required to approve every NASA research solicitation. The bottom line is that a well-written, comprehensive, and accurate solicitation will support and justify a clean, trouble-free review and selection process; conversely, deficiencies in the solicitation can haunt the entire flow of activities and, in a worst case, lead to an untenable recommendation for selection. This point was expressed succinctly yet poignantly in the minutes of the 1979 Space Science Steering Committee* for the VOIR mission:

> *"The (*Steering*) Committee paused in a moment of reflection on the wonder of hindsight in the writing of AO's."*

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* The Steering Committee is authorized by the Associate Administrator to review the totality of the procedures and documentation concerning an AO and is the final step before presenting a recommendation for selection.

2.2 On the Gracious, Yes, Even Thankful, Acceptance of "Guidance," During the Review of a Draft Solicitation. The author of a solicitation should not take personally the inevitable questions about and/or specifications for changes of his/her efforts, especially if it is his/her first attempt at writing such a solicitation. Writing a clear, concise research solicitation that is fully consistent with NASA's legal procurement policies and accepted practices, and that is also coherent, professionally formatted, edited, and complete, is as much of an art learned by experience as one of knowledge of grammar and processes. It is neither an easy nor trivial exercise.

2.3 On the (Sometimes) Difficulty of Getting Started …or… How to Get Past Writer's Block.

> *Out of clutter, find simplicity. From discord, find harmony. In the middle of difficulty, lies opportunity.*
>
> — EINSTEIN'S THREE RULES OF WORK.

The *Introduction* of a solicitation can be the hardest part to write. However, once the full scope of the document is succinctly and clearly summarized in a single page of deathless prose, then the rest tends to follow as the day doth follow the night. A useful approach is to succinctly and clearly answer the classic five questions taught in "Journalism 101" as

the basis for any good news story, namely: WHO, WHAT, WHY, WHEN, and WHERE. Subsequent sections of the solicitation then expand on these issues and in addition answer the sixth question: HOW (to prepare and submit the proposal itself).

2.4 Standard Outlines for Solicitations …or… Yes, This is One Situation When It's Best to Color Within the Lines …or… No, a Solicitation is Not Meant to be an Exercise in Creative Writing. NASA FAR Supplements 1872 and 1835.016-70 specifically provide outlines for the Announcement of Opportunity (AO) and the NASA Research Announcement (NRA), respectively (and which are given as Appendices A and B to this Handbook). Although these outlines are inherently arbitrary, they are the law, and, if nothing else, their use will help ensure complete documents whose structures are familiar to those on the Concurrence Cycle, especially the Offices of Procurement (Code H) and General Counsel (Code G). Note that no such formal guidance exists for the Cooperative Agreement Notice (CAN) but the AO outline can be used to ensure completeness.

2.5 The Dreaded Concurrence Cycle, I: No, It is Not a Rubber Stamp Process …or… It Is Not Done Until It is Done. Plan for the time it takes for the Concurrence Cycle to run its course, which on a good day takes three weeks and on a bad day as long as six weeks, for two basic reasons: First, the concurrees really do read and critique the solicitations and bring to bear their unique expertise and knowledge about the solicitation activity; and two, everyone on the Concurrence Cycle sheet already has a full-time job and is not sitting there waiting for a new solicitation to land on their desk for review. In addition, negotiating and accommodating any specified changes takes time, which in the worst case may involve substantial changes that require the reconcurrence by those who have already approved the original version. This Cycle can be shortened by a week or two by distributing the document in parallel within Code S, as well as to Codes H and I, using multiple copies each prefaced with a copy of the Concurrence Cycle sheet, and then keeping track of the multiple sheets as they are returned, each with just one signature. Note that the last external concuree, Code G, will not examine a document until all prior concurrences have been secured and specified changes up to that point have been made (see also Appendix C below).

2.6 The Dreaded Concurrence Cycle, II: A Delay in Getting It Started Does Not Justify Someone Else's Crisis. The inability to initiate the required Concurrence Cycle in a timely way to meet some desired schedule is never a reason for priority attention by the designated concurees. The only exception to this rule may be for the occasional program that is recognized at the highest levels (i.e., Code A) as having demanding Agency priority (and these don't come along very often).

2.7 That Darned 23-Day FBO Requirement (But When All is Said and Done, It's Not as Bad as You Think). The time required for the *Federal Business Opportunities* (FBO) cycle is 23 calendar days from the time its final authorizing signature is obtained, as follows: eight days for processing after HQ transmits the FBO notice to GSFC Procurement (who sends it on to the FBO office), and 15 days, by law, for posting on the FBO Web site. And no, there is no way to avoid this requirement. However, this period

also accommodates the ten working days that the NASA Peer Review Service (NPRS) is allowed by contract to convert the text for posting on the Web, as well as the time required by NASA's print shop to produce hard copies. Therefore, since 23 calendar days always involves at least three weekends, then the FBO requirement only delays release of an announcement about one calendar week beyond that required by NPRS.

The only exception to the requirement for FBO posting is if the solicitation states that contracts are not to be allowed for funding, i.e., that only grants and/or cooperative agreements will be used to fund the selected proposals. Even in that case, however, FBO posting should be done as a matter of completeness since it is possible for a for-profit organization to be funded through a grant or cooperative agreement under special circumstances. In a case like this, the solicitation may be released on the same day that the FBO notice is posted; i.e., the 15-day posting period does not apply.

2.8 The Principle of Internal Consistency …or… The Need for Items That are Referenced Within a Solicitation to Actually Exist (Really!). One of the most common "gotchas" that arise during the development of a long, complicated solicitation is the mismatch between the reference given in the text to the actual designation of a specific section, figure, and/or table in the document. For example, an early version of the text may have correctly stated, *"Refer to Table 3 and Figure 4 in Section 5 of this AO,"* whereas the final, revised version should say, *"Refer to Table 6 and Figure 7 in Section 8 of this AO."* Therefore, it is imperative that the final review of a solicitation also include checking every cross reference of every kind for accuracy and validity.

An attendant aspect is the need to be consistent in the use of terms throughout a solicitation. For example, once the term and definition of a "Principal Investigator" has been introduced, don't later refer to that person as the "task leader" or "manager of the investigation." Likewise, once a formal name has been introduced, such as "Data Node," then always use that term in full (or its formally introduced abbreviation) and not use just "node" without a capital.

2.9 The Joy of the Yearly "ROSS" NRA. The omnibus NRA, *"Research Opportunities in Space Science (ROSS) – 20xx,"* is released by late January each year and incorporates the vast majority of the OSS Supporting Research & Technology (SR&T) programs that were previously released as separate (as many as several dozen!) solicitations. It is based on the common proposal formats and procedures described in the *NASA Guidebook for Proposers to a NASA Research Announcement (NRA)* that is formally "incorporated by reference" into the NRA.

Each ROSS Program Element in its Appendix A contains at least two sections, "**1. Scope of Program,**" which provides the objectives of the solicited research program; and "**2. Programmatic Considerations**," which provides, at a minimum, an indication of the number and average value of the awards to be made (pending the submission of proposals of merit, of course) and the name and address of the cognizant OSS Program Executive. It may also contain additional information, such as deviations from the default standards given in the *NASA Guidebook* (most commonly concerning proposal page limits and/or

the number of copies of a proposal to be submitted), or special instructions for large, multi-institutional proposals.

It is particularly easy to add a new Program Element to a ROSS NRA during the course of its lifetime (~13 months from its date of release) by means of an amendment based on the following rules:

(i) the new Program Element must reference the *NASA Guidebook for Proposers* as the baseline for how proposals are to be formatted and submitted, and the *Summary of Solicitation* of the parent ROSS NRA for the various relevant Web and mailing addresses for proposals;

(ii) the new Program Element must not alter the basic review criteria as stated in the *NASA Guidebook* (in practice, additional specificity can always be accomplished by stating that the objectives to be evaluated are to be considered as part of the science and technical merit of the proposals); and

(iii) the new Program Element must contain two sections as noted above, where its second section must also contain the due date for Notices of Intent (NOI's) to propose and the deadline for delivery of hard copies of the proposals.

An amendment Program Element is vetted by means of an abbreviated, OSS-only Concurrence Cycle involving all key OSS personnel, which typically takes only 1-2 weeks. In addition, because of the brevity of most amendments, the conversion of the text of a new Program Element by NPRS for mounting on the Web typically takes only a few days. Since the "parent" ROSS solicitation has already satisfied the 15-day requirement, its FBO announcement can be released on the day of its posting on the NRA's Web site. In summary, a new ROSS Program Element can be approved and released in as little as two weeks from initiation of its Concurrence Cycle, compared to eight weeks or more if formulated as a new, stand-alone NRA.

2.10 When It's OK, Yes – Even Desirable – to Be a Bit Wishy-Washy in a Solicitation. A solicitation must also be careful about being overly specific or restrictive concerning available budgets and/or the number of proposals to be selected; that is, leave wiggle room whenever possible, especially when projecting how many proposals might be selected, the funding levels for awards, the schedule for the program, the types of proposed investigations, and resource requirements. The point here is that, in addition to not restricting the imagination and inventiveness of the proposers, solicitations should not promise something that NASA may not be able to deliver as future events unfold, and/or that unnecessarily restricts NASA options and flexibility in selecting the best and most creative proposals. See the following examples.

UNREALISTIC OR OVERLY SPECIFIC LANGUAGE	LANGUAGE THAT ALLOWS FLEXIBILITY FOR BOTH PROPOSERS AND NASA
The budget for this program is $4.368M and will fund twenty awards.	The budget for this program is expected to be about $4.3M. Pending the submission of proposals of sufficient merit, up to 20 selections will be made.
Selections for this program will be announced on May 16, 2003.	The goal for announcing the selections for this program is mid-May 2003.
Proposal budgets must not exceed $100K.	Although investigations may be budgeted at any level, proposals priced in excess of $100K will be selected only if they exhibit exceptional merit and breadth of objectives.
Proposed investigations must include provision of one of the strawman instruments listed in Table 2.2 as defined by the Mission Science Definition Team.	Proposed investigations must address at least one of the science objectives given in Table 2.1 and be achieved through the analysis of data returned from the proposed flight instrumentation. Such instruments may similar to one of those in Table 2.2 or may be any other that will achieve the stated objective(s) of the investigation.
Proposed flight experiment hardware must not exceed the resource limits given for the generic instruments given in Table 2.2	The nominal resource limits for flight experiment hardware are given in Table 2.2. However, since the selected instruments may require different resources than those shown, tradeoffs for the integrated payload may be possible during the Phase A and B studies. Therefore, proposers are encouraged to both minimize their requirements, as well as identify tradeoff options for resource requirements

2.11 The Determination of the Proposal Due Date …or… What Do You Mean That We Can't Require Proposals to be Due in a Week? Although Federal Acquisition Regulations specify that Government solicitations must be open for at least 30 days, as a matter of policy NASA research solicitations should be open for 90 days. However, a shorter open period (down to 75 days, or occasionally 60 in really unusual cases) may be justified under the following circumstances:

(i) when a draft of the solicitation has been released in advance and its final version contains only modest revisions for all major parameters;
(ii) for extremely simple solicitations, or ones for which at least several nearly identical solicitations have been previously released (e.g., a yearly Guest Observer program for an operating satellite); and
(iii) for programs having an especially demanding schedules owing to unforeseen circumstances (Note: in cases like this, pre-release announcements should be posted through the OSS Electronic Notification system noting approximately when the solicitation is anticipated and that its proposal period will be shorter than usual).

2.12 Internal Consistency — It's Good Idea for Jigsaw Puzzles, and It's a Good Idea for Solicitations as Well. One of the trickiest issues concerning a solicitation is that must be internally self-consistent regarding all of its stated boundary conditions and/or requirements; that is, the sums or totalities of any individually stated "parts" must agree with the "totals" for that resource as may be stated elsewhere in the solicitation. This issue of self-consistency frequently arises concerning discussions of budgets, schedules, physical resource limitations for a payload, and/or the number of anticipated selections. However, this issue also may arise concerning stated "requirements" of one type or another that can creep into the text but that are not properly reflected in the stated evaluation criteria, which in a worst case can result in an indefensible rationale for selections. Therefore, when nearing the end of writing a solicitation, its author should stand back, take a deep breath, and look at it holistically for internal self-consistency. Any and all stated totals must be neither less nor greater than the sum of their parts.

2.13 Statement of the Evaluation and Selection Criteria: The *Dien Bien Phu* for Many a Solicitation …or… What Do You Mean, "We have to select THAT proposal?" The careful and accurate statement of the evaluation criteria is the beating heart of a solicitation from the point of view of the cognizant Program Official and then ultimately, that of the Selecting Official. The Law of Unintended Consequences applies here. Poorly written evaluation and selection criteria may allow a proposal that is not what was envisioned as the type or quality suitable to achieve the program objectives to pass through the review and evaluation system and become a candidate for selection. See also the next entry below.

2.14 Why It Pays to Be a Bit Paranoid About What's NOT in a Solicitation as Well as What Is In It …or…

If a Solicitation Has a Loophole in It, Chances Are Pretty Good That Some Proposer Will Try to Get Through It Either on Purpose or by Accident …or…

If a Solicitation Can Be Misinterpreted, It WILL Be Misinterpreted.

Sometimes what is not in a solicitation can be as important as what is. The point here is that a good solicitation must be free of potential loopholes that allows the submission of proposals that are untenable from the point of view of the program at hand or even the Agency at large. Therefore, the author of a solicitation must always be vigilant of potential inconsistencies or lapses in limitations that a proposer may intentionally exploit or unintentionally stumble through; that is, a good solicitation must be written from an exclusionary point of view as much as from an inclusionary one. If this makes the solicitation sound a bit defensive, so be it; the alternative can really ruin your day. As an extreme example, imagine a solicitation that asks for a bug killer, and then receiving a proposal for a hammer.

2.15 On the Dificulty of Acurate Proof Reading …or… Yes,, It's Hard to Due But It Just Has to Bee Dun. Finally, it is a regrettable but real fact of life that it is nearly impossible for an author to accurately proof read his/her own material, especially after working on the same text on a nearly continuous basis for weeks (as is frequently the case as a solicitation nears completion). Nevertheless, such proof reading must be done to the maximum extent possible before submitting it for the Concurrence Cycle; it is not the responsibility of the concurrees to correct an egregious number of errors in grammar, punctuation, or syntax, or worse, find lapses in internal consistency. The use of the 'Grammar Check' feature of the word processing software will help catch many of the more serious boo-boos and should be used at least once as the document nears what is thought to be its final form, ready for the Concurrence Cycle. Regardless of the use of such aids, one of the best techniques for proofing any text, especially one's own material, is to read a printed copy OUT LOUD at a s-t-e-a-d-y, sssslow cadence, which is remarkably effective at catching errors that even many silent, fast readings will repeatedly fail to catch.

2.16 On the Application of the Japanese Concept of *Shibui*, That is, "Beauty Through Simplicity and Understated Elegance" …or… Sometimes 'Less is More' in the Writing of a Solicitation. One of the most common problems with a solicitation is that it can become overly long and wordy, especially if written by a team of people, each member of which wants to make sure that their particular area of interest or concern is adequately covered, and then covered again, and again, and again. The Program Officer in charge of the solicitation must exercise iron-willed determination to cut out the excess words, state simply and directly what is being conveyed just one time and in one place, and then let it be (see also the next two entries).

2.17 On the Need for Multiple Readings (and Probably Revisions) …or… Yes, It Really is True that Sometimes You Just Can't See the Forest for the Trees. One of the most vexing and sometimes difficult shortcomings to catch in the "final" version of a solicitation is the placement of material on the same subject in different paragraphs, if not even different subsections altogether. This problem crops up especially when a

relatively mature document is being edited by a variety of people, each of whom is reorganizing, adding, and/or deleting material without consultation of the others. Therefore, the "final" proof reading of a document must always include awareness of whether all the material relevant to the subject of a particular paragraph or subsection is collected in just one place or whether it has become fragmented over multiple locations. This kind of shortcoming can be caught only by proof reading for overall comprehension with careful awareness of the content and organization and not just for the minutiae of grammar, syntax, or punctuation.

2.18 On the Value of Never, Ever, Not Even Once, Repeating or Rephrasing the Same Material in a Solicitation … or … Let Me Count the Times that Ignoring This Precept Has Led to the Gnashing of Teeth. Repeating critical material such as schedules, evaluation criteria, and program objectives is, at very best, only redundant, thus making the document longer than necessary. However, at the very worst repetition may lead to contradictions if the material is recast in a misguided attempt to show a degree of creative writing, thereby leading to a potentially invalid solicitation. Bottom line: State something once and only once, and then refer back to its location as required. A corollary to this statement is that every part of a solicitation should be captured in a clearly identified section or subsection (see Section 3.3 below).

3.0 SPECIFIC GUIDELINES* FOR WRITING STYLE AND FORMATS (OR, WHAT THEY DIDN'T NECESSARILY TEACH IN ENGLISH 101)

*Adherence to these guidelines will help ensure a document that is consistent with the generally accepted principles of grammar, punctuation, and syntax, as well as those of the Government Printing Office (GPO). Although some of them are admittedly arbitrary, adherence to their use also helps ensure the release of at least uniformly formatted documents. Note that at least one example of nearly every guideline below is also explicitly illustrated somewhere in the entries themselves.

3.1 Sentence length. Strive to use relatively short sentences. Anything over two lines (~ 25-30 words) in length is a candidate for splitting. Conversely, a judicious mix of long and short sentences also can help make a document more interesting to read (mentally analogous to walking on a slightly uneven surface rather than one that is perfectly flat).

3.2 Abbreviations.

(i) Never use an abbreviation (e.g., "OSS") until it is first fully spelled out, and thereafter do not switch back and forth with the unabbreviated name.

(ii) Avoid abbreviating something that is only used a few times, especially if only used in only a limited section of text.

(iii) A particularly long and complex document that includes many and/or unique abbreviations may benefit by the inclusion of a Glossary.

(iv) The Government Printing Office (GPO) standard is to write the plural of an abbreviation without an "apostrophe-s", e.g., "Future AOs will be released as the budget allows." The possessive case is written with an apostrophe, e.g., "This AO's objectives are given in Section 1.2."

(v) Abbreviations do not use periods between the letters except for "United States," which is abbreviated as "U.S." and not "US".

3.3 Sections and Subsections. Breaking material into subsections helps organize a complex body of material, establishes a sequential numbering system for ease of referencing material given elsewhere in the document, and provides visual guidance to its contents. There are three general guidelines for using subsections: (i) if a Section is to be further subdivided then all of its material must be captured in a subsection, i.e., don't start with an untitled paragraph of introductory material and then start numbered subsections (if prefatory material is needed, capture it in a preliminary subsection entitled "Introduction" or "Overview," which then allows accurate referencing as may be needed as discussed in Section 2.18 abore); (ii) if a section is to be further subdivided there must be at least two or more subsections; and (iii) avoid using anything beyond third-level subsections unless there is no other reasonable way to organize the material. A straightforward and visually-differentiated format for the section titles down to third-level subsections is as follows:

1. MAIN SECTION
(align flush left; two spaces after section number; section title in underlined capital font; double line spaces between main sections)

1.1 First-level Subsection
(align flush left; two spaces after subsection number; title in underlined, lower case font; single line space between subsections)

1.1.1 *Second-level Subsection*
(indent 1/2 inch; two spaces after subsection number; title in underlined, lower case Italic font; single line space between subsections)

1.1.1(a) *Third-level Subsection*
(indent 1/2 inch; two spaces after subsection number; title in lower case Italic font; single line space between subsections)

Section designations for any Appendices use the same format but are prefaced with the letter-designation of that Appendix, e.g., "A.1," "B.4.3," etc.

3.4 Non-duplication of material. Never, ever repeat material, especially critical items like program objectives, schedules, and evaluation criteria. State them once in the clearest possible ways and then, as needed and appropriate, refer to their locations by section or table numbers. As a practical matter, providing the schedule in only one place also simplifies preparation of the final document once it has been signed by the Selection Official and its release date is determined (which in turn determines the Due Date for proposals and the target for selections).

3.5 Clarification and Explanation of Requirements. Do not use the term "guideline" when in fact the item or issue under consideration is a "requirement" or hard limit; that is, if some issue or available resource is in fact a requirement or hard limit then state that fact clearly, unambiguously, and consistently. A useful rule is to remember that a "requirement" can (and should!) be used as an evaluation and/or selection criterion whereas a "guideline" may not. As a corollary, avoid making a solicitation sound capricious by stating requirements without explanation or rationale. For example, instead of

"Flight hardware should not exceed the resource limits given in Table 3.1,"

write

"Owing to the limitations of the intended launch vehicle and spacecraft, flight hardware must not exceed the resource limits given in Table 3.1."

3.6 Tables and Figures.

(i) Insert the item as soon as possible in the text after it is first referenced and if it is not more than one page in length, so that it fits entirely on a single page;

(ii) figures and tables may be numbered either sequentially throughout the entire document (e.g., "Table 1" through "Table N" for the last one), or by using main section numbers (e.g., "Table 1.1, Figure 3.4," etc.), which has the advantage that the addition or deletion of an item only involves renumbering within that one section; and

(iii) the identifier of a figure or table (in underlined capitals, ending with a period) and its caption (in "Sentence" case, ending with a period) appears at the top of the item and not the bottom. In the example below note that the title "TABLE 3.1" is underlined but not its concluding period, whereas the name of the table is not underlined and also ends with a period.

TABLE 3.1. Allowable Resources for Flight Experiment Hardware.

Payload Resource	Maximum Value
Mass	6.5 kg
Volume	20x40x10 cm
Power	6 W

3.7 Use of "which" vs. "that". As a general rule, a nonrestrictive clause that provides additional information about or otherwise only amplifies the preceding material in the sentence starts with "which" and is always set off by a comma, whereas "that" initiates a restrictive clause that identifies or defines a particular individual or object and is not set off by a comma (Note: a good way to become comfortable with this usage is by noting how they are used in responsible commercial publications). An effective test is to read the sentence with the material in question deleted: If the sentence still makes sense then the deleted material is almost certainly nonrestrictive and is properly prefaced with "which" as set off with a comma; however, if the sentence no longer make sense then the material is restrictive and is prefaced with "that" and no comma.

3.8 Use of Transitional Words and Phrases. Judicious use of transitional words and phrases (e.g., "conversely," "in spite of," "however," "although," and "therefore") either between clauses in a sentence or to initiate in closely linked, consecutive sentences can help guide the reader to understand and follow a course of logic and/or recognize an important conclusion, e.g.,

> "This mission is meant to directly complement the SPACESAT mission; therefore, the launch date specified above is quite firm."

3.9 Writing Numbers. As a general rule, the numbers "zero" through "ten" are spelled out whereas numbers equal to or greater than 11 are written as numerals. The exception is when quoting an entity that has physical units, e.g., "8 kg."

3.10 Formats for Units. Units are not capitalized unless derived from a proper name, e.g., "W" for "Watt." Unusual or unique units should be fully spelled out the first time they are used. In all cases always use a space between the numerical quantity and its unit, e.g., 8 kg, 16 W, 10 furlongs/fortnight, etc.

3.11 Use of Underlining. Use underlining sparingly and then only to emphasize the most important, critical word(s) in a sentence; avoid underlining entire sentences.

3.12 Use of Italics. Use italics for the formal titles of books, reports, publications, etc., and for non-English phrases such as *in situ* and *de facto* (and note that "*in situ*" is two, nonhyphenated words and not "in-situ").

3.13 Format for Expressing Costs. The abbreviations of "K" for thousand and "M" for million are sufficiently common and understood that they may be used without prior definition. The NASA format is to place these abbreviations directly behind the number without a space, *e.g.*, $14K or $260M. When discussing a long range program it is frequently necessary to specify whether proposal costs are to be submitted in current year dollars (*e.g.*, CY$) or Real Year dollars (RY$). However, if RY$ are specified, then an approved Inflation Index must be included in the solicitation.

3.14 Formats for Lists. When formatted as a separate list, a sequence of two or more items may be set off by indented bullets (•) or by lower case Roman numbers (*e.g.*, "(i)…; (ii)…; (iii)…"), which may also be used to list three to four items within a sentence. In either case, such formatting helps break up the tedium of what might otherwise be a long paragraph, as well as aid the reader to more easily identify separate items. Conversely, avoid using a list for every sequence, especially if only two or three items are involved.

3.15 The Goal of "Parallelism" for the Entries in Lists. When developing a list of any kind, as a matter of good writing style and comprehension it is highly important to maintain "parallelism" (*i.e.*, uniformity) of syntax and structure of its entries. Therefore, the entries may be <u>all</u> nouns, <u>all</u> phrases, or <u>all</u> complete noun-verb sentences but <u>do not mix</u> the different types, or change their formatting in terms of indentations, spacings, and/or punctuation. In order for the reader to unambiguously understand that each entry is complete, ensure that each entry either ends with a period if the listed items are sentences, or with a semicolon if the items are phrases, names, or nouns. If the latter, the next to the last entry ends with "or," "and," or "and/or," as appropriate. Finally, the last entry always ends with a period to indicate that the list is finished.

For example:

> The scientific objectives of this mission are to measure and characterize over the period of one Martian year
>
> - the composition and dynamics of the near-surface atmosphere;
> - the temporal and spatial distributions of wind-borne dust; and
> - the sources and sinks of volatiles, especially carbon dioxide and water.
>
> In order to do this, the NASA Science Working Group for this mission has recommended science investigations that will derive their data from a strawman payload composed of the following generic types of instruments:
>
> - an infrared (IR) laser spectrometer,
> - an aerosol detector, and
> - a gamma ray spectrometer.

3.16 Punctuation and Quotation Marks. Punctuation marks such as commas, semicolons, and periods generally go <u>inside</u> the concluding quotation marks (Note: British usage is typically the opposite, which is yet another example of how standards can

change when the colonies declare independence). The occasional exception is when a specific term or name is set off by quotes, in which case the punctuation mark may be outside the concluding quotation mark. Also, colons go outside of the concluding quotes.

3.17 Clarity of Terms, I. Do not confuse the word "insure" (meaning to cover or underwrite) with the word "ensure" (to assure or to guarantee); *e.g.*,

> To help ensure the safe delivery of flight hardware, vendors are urged to insure it for full value before shipment.

3.18 Clarity of Terms, II. Avoid using the word "very" instead of more descriptive and/or precise adverbs and adjectives.

3.19 Clarity of Terms, III. The abbreviation "*i.e.*" stands for "that is," while "*e.g.*" means "for example;" use them accordingly, and they are always set off with commas. They may be italicized or not so long as it consistent throughout the document.

3.20 Clarity of Terms, IV. Avoid the temptation to invent new words, or string together adjectives Germanic-style in front of a noun, which can cause the reader to to ponder exactly what is being said. For example, instead of

> The objective is to validate geological compositional remote sensing by sample return and analysis,

write

> The objective is to validate the technique for the determination of geological composition by remote sensing through the analysis of returned samples.

3.21 Standard "Document" Formats for Solicitations. The standard formats to use for eventual printing on 8-1/2x11 inch paper are:

Margins	• **Top, Bottom, & Left**: 1 inch • **Right**: 1.5 inches
Text Formats	• **Written Text**: Align left; paragraphs not indented. • **Lists**: Indent 1/2 inch, center title. • **Addresses**: Indent 1/2 inch. • **Line Spacing**: Single for text; double for paragraphs..
Text Font	12-point Times New Roman
Page Numbers	• **Table of Contents**: Centered, lower case Roman numerals in 10-point font (*e.g.*, i, ii, iii) • **Main Text**: Centered, Arabic numerals in 10-point font, continuous from section to section. • **Appendices**: Centered, alpha-numeric 10-point font using the format "A-1, etc." for Appendix A, "B-1, etc." for Appendix B, etc.

3.22 Use of Commas. There are two cases where a comma is <u>always</u> used before the conjunction "and":

(i) in a true compound sentence, *i.e.*, a sentence composed of two otherwise independent noun-verb sentences; and

(ii) preceding the last item in a sequence of three or more items, *e.g.*, "Refer to Appendices A, B, and C for technical details about this program; refer to Appendices D and E for guidelines about proposal formats and contents."

Note that "or" and "but" are not usually treated as conjunctions and, therefore, not usually preceded by a comma, although they may be depending on the complexity of the sentence. However, the connecting phrase "as well as" is normally treated as a conjunction and is preceded with a comma.

3.23 Formatting of Text to Eliminate "Orphans" and "Widows" (and if you have to ask what those terms mean, read on). After the text is absolutely final and ready for mounting on the Web and for printing, a final review is required for both line and page breaks using the following guidelines:

(i) Eliminate "orphans" at the ends of lines by judiciously dropping unnecessary words and/or by inserting paragraph breaks (note: if words are dropped, make absolutely sure that the meaning and/or clarity of the sentence is not compromised!). The most common orphans are the separation of a person's title from their first name, the separation of the numerical value of some quantity from its units, the separation of the month from the rest of a date, and the separation of a section number from its title, for example:

WRONG, in four places:

The data for this project may be obtained anytime after August 12, 2005, from the Planetary Data Center (PDC) using 120 kbyte disks. For information contact the PDC Director, Dr. John Doe at jdoe@nasadatacenter.gov ; also refer to Section 12 in this AO.

RIGHT:

The data for this project may be obtained after August 12, 2005, from the Planetary Data Center (PDC) using 120 kbyte diskettes. For information contact the PDC Director, Dr. John Doe at jdoe@planetarydatacenter.gov; also refer to Section 12 in this AO.

(ii) Insert forced page breaks as necessary in order to prevent (a) just a single line of text that ends a section from appearing alone at the top of the next page (called "widows" in the publishing trade); (b) less than two lines of text of any new section appearing at the bottom of the page on which that section's title initially appears; and (c) splitting a mailing address between two pages.

3.24 Web Addresses. Double check that all Web addresses that are embedded in the text are accurate and live, since frequently the pacing item for the conversion of final documents for posting on the Web is the discovery of inoperative or erroneous URL's.

3.25 Use of Passive Voice (yes, it's a boring way to write, but a solicitation is not an exercise in creative writing). Research solicitations are written in the passive voice, e.g., write

> Proposals are due by the schedule given in Section 8,

instead of

> You should submit proposals by the schedule in Section 8.

3.26 Use of Quotes to Set Off New or Unusual Terms. It is not uncommon for a solicitation to use new or unusual terms and "buzzwords" that may be common within NASA or a highly specialized community of practitioners but not in the mainstream of the average informed reader. Such terms are properly set off with quotes the first time they are used but not thereafter, e.g.,

> The prototype mission envisioned "touch-and-go" sampling and an extensively instrumented platform (Note: A discussion of touch-and-go technologies available for use is given in Appendix C of this AO).

3.27 Avoidance of Ambiguity, I. If something in the solicitation is in fact required or otherwise mandatory, be unambiguous about it by using the definitive verb "…must…" instead of the more ambiguous and patronizingly polite "should;" *e.g.*, write

> At a minimum, proposals must address the objectives given in Section 5,

instead of

> At a minimum, proposals should address the objectives given in Section 5.

For the same reason, do not use the word "please": A solicitation does not ask favors; either something is required of the proposer or it isn't.

Conversely, be cautious in the use of term "must" since it does not leave room for creativity on the part of the proposer, which can work against the best interests of the program. For example, the statement

> The proposed spectrometer must not exceed the specifications given in Fig. 5-3,

may preclude a design that offers significant advantages if some parameters could be relaxed a little as would be allowed by the following wording:

> The proposed spectrometer nominally must not exceed the design specifications given in Fig. 5-3, although slight deviations will be considered by NASA if they allow a <u>significant</u> advantage in performance of the instrument and/or its other required resources, including cost.

3.28 Avoidance of Ambiguity, II. Do not use the pronoun "This…" or its plural "These…" as stand-alone subjects of a sentence, e.g., write

> These objectives should be clearly addressed in the proposal,

instead of

> These should be clearly addressed in the proposal.

3.29 Avoidance of Ambiguity, III. Once a term or name has been introduced for some specific item, continue to use it exactly the same way to eliminate doubt or uncertainty that the same item is being discussed. This practice is especially important when referring to required parts of a proposal or critical aspect of the proposed program. Few things are more annoying than to encounter a variety of names for what turns out to be the same item.

3.30 Format for Dates. The NASA format for dates is "Month Day, Year" and not "Day Month Year" as used by the Department of Defense, or "Year Month Day" used in some science venues. When a date is written out within a sentence, a comma is used after the year, e.g.,

> The date of September 16, 1996, for mission termination was in error.

However, a comma is not used if expressing only the month and year, e.g.,

> This report was issued in March 1996 by the Project Office.

Solicitations should avoid using the abbreviated numerical form for a date, e.g., "9/16/96," unless part of table containing dates where space is limited.

3.31 Format for Addresses. Addresses should be indented 1/2 inch, formatted in the following hierarchical order, and not broken over two pages (i.e., they are to appear entirely on the page on which they begin):

Title/First and Last Name	(plus initial if known)
Suborganization	(as appropriate)
Mail Code	(as appropriate)
Parent Organization	
Street Address	(as appropriate)
City, State Zip	(note: 9-digit ZIP required for NASA addresses)
COUNTRY	(as appropriate, in capitals)

3.32 Spaces After Periods. The Federal Printing Office (FBO) standard is to always use two spaces after the period at the end of a sentence, as well as after a colon.

3.33 Line Spacings.

- Two line spacings between the prime (*i.e.*, single digit) sections.
- One line spacing between all further subsections.

- One line spacing between paragraphs.

3.34 Using Prefixes to Form Compound Words. The Government Printing Office (GPO) standard for forming compound words with most common prefixes is as a single word without a hyphen, *e.g.*,

multiyear, nonspecific, preflight, postlaunch, reissued, semiannual, substandard.

3.35 Hyphens. Do not overuse hyphens: they are generally used only when a prefix or word distinctly modifies a proper noun, *e.g.*,

non-U.S., multi-Agency.

3.36 "Data" is Plural. NASA and GPO uses the word "data" as a plural, *e.g.*,

These data are given in Section 4.6 of this AO.

4.0 Characteristics of Research Solicitations Used by OSS (…being an Absolutely Unique Compilation of Information Not to be Found Anywhere Else in NASA)

The following table defines the key characteristics of the four types of research solicitations as used by the Office of Space Science, both as a guide to what each entails as well as to help decide which type may best suited for a new program that is to be offered. Note that this table is extensively based on experience and practice, since NASA FAR Supplement provides at best only general guidelines for the Announcement of Opportunity (AO) and the NASA Research Announcement (NRA), and virtually nothing about the Cooperative Agreement Notice (CAN). In fact, the only real guidance for a CAN must be gleaned from the *Grants and Cooperative Agreements Handbook.*

At their extremes, the "boundary conditions" that dictate the appropriate type of solicitation for a given program are clear and well defined. However, depending on the nature and demands of the sponsoring program for which research is to be solicited, there are situations in which the decision is not nearly so definitive and requires careful consideration.

In addition, with the exception of the most formal solicitations, these characteristics are meant to be only broadly descriptive and applicable for each type. It is quite possible that a given solicitation may have characteristics of one of the other types depending on the objectives and the nature of the program opportunity. In any case where doubt or uncertainty remains, and in the interests of the minimization of pain by all concerned, in depth consultation with the expected OSS Selecting Official and/or with Codes GK and HS before starting to write a solicitation is strongly advised to ensure that the Concurrence Cycle will eventually proceed in an expeditious fashion.

CHARACTERISTIC OF SOLICITATION AS PRACTICED BY THE OFFICE OF SPACE SCIENCE	**TYPE OF RESEARCH SOLICITATION**			
	ANNOUNCEMENT OF OPPORTUNITY (AO)	NASA RESEARCH ANNOUNCEMENT (NRA)	COOPERATIVE AGREEMENT NOTICE (CAN**)**	NASA ANNOUNCEMENT (AN)
TYPES OF RESEARCH INVESTIGATIONS FOR WHICH THE SOLICITATION IS COMMONLY USED	• Always used for space flight mission investigations that involve the design, fabrication, integration, and operation of experiments, and the analysis & publication of data. • Sometimes for adding flight investigation team members (i.e., "Participating Scientists") to assist in mission operations and to analyze/publish data. • Occasionally for investigations involving hardware additions to NASA ground-based telescopes and the analysis/publication of data.	• For ground-based research investigations largely of the proposer's own choosing that are aligned with the NRA's stated objectives • For experiment investigations carried out on airplanes, balloons, suborbital rockets, the STS and/or ISS, and short-duration space flights (e.g., flight testing/validation of new technologies). • For Guest Observers to analyze data but not necessarily to help with mission operations.	• For activities in which substantial interaction and cooperation is anticipated and expected between NASA and the investigator during the performance of the solicited activity in order to achieve NASA's objectives (e.g., establishing and running a science research institute, or activities related to the OSS education and public outreach program).	• For investigations that require the acquisition of new observational science data from an operating satellite for which no unique data analysis budget exists (selected investigators may propose for data analysis support through omnibus data analysis programs as may otherwise exist, or analyze the data without specific support from NASA).

TYPICAL DEGREE OF SPECIFICITY OF SOLICITED RESEARCH OBJECTIVES	High to very high depending on scope and degree of definition of stated scientific program objectives, or may be quite broad if only specifying the cost and launch parameters of a type of space flight mission investigation.	May be quite low for general Supporting Research & Technology (SR&T) NRA, to very high for purposes of well-defined objectives.	Somewhere between that for an AO and an NRA; may also separately specify research objectives as well as those for service.	Quite specific, for a given name mission that usually will have very specific requirements for taking new observations.
TYPICAL END-TO-END LEVEL OF EFFORT NEEDED FOR THE WRITING, APPROVAL, AND IMPLEMENTATION BY OSS HQ STAFF	Very high, requiring major attention by cognizant Program Officer typically for most of a year; many formal activities involved, concluding with the selection by the OSS Associate Administrator.	Moderate compared to the AO; selection usually by the cognizant OSS Division Director but may be the Associate Administrator for multidisciplinary activities.	Moderate to high depending on nature of the solicited activities and designation of Selection Official (Division Director or Associate Administrator).	Comparable to an NRA; although funding is not involvec careful budgeting of the resourc being competed (e.g., observing time) must be done.
TYPICAL SIZE OF AWARDS OFFERED FOR SELECTED INVESTIGATIONS	≥650 M$ total for long-duration flight missions lasting many years; lower limit: 100-200 K$/yr for "Participating" or "Mission" Scientists (PS's) for a few years.	Typ. 50-200 K$/yr for most awards; can be >1 M$/yr for suborbital, STS or ISS payload investigations involving hardware; Guest Investigator awards typically 50-100 K$ for just one year.	Large range, from a few 100's K$/yr up to several M$/yr based on nature of solicited activity.	No funds awarded; NASA's onl obligation is to provide the requested data in a usable format; investigator must apply to other programs for support funds.
NATURE OF BUDGET AUTHORITY FOR	May be unique line item for a one-time program or through a standing budget line for an	Ongoing yearly SR&T budget line that sometimes, but not always, receives a cost	May be unique a budget line or drawn from on-going SR&T funding.	Not applicable since no funding involved.

SOLICITED RESEARCH PROGRAM	ongoing flight mission program (e.g., Explorer and Discovery).	of living increase; budget may be augmented for specific new objectives.		
TYPICAL LEVEL OF NASA MANAGEMENT OVERSIGHT SPECIFIED FOR SELECTED INVESTIGATIONS	Extensive, with many formal reviews and decisions to assure adherence to cost and schedule; cancellation of investigation due to overruns a continuing possibility.	Minimal; yearly funding supplements for duration of the award a near certainty pending the submission of a satisfactory Annual Progress Report.	Can be extensive depending on the give-and-take between NASA and the investigator to accomplish the agreed upon cooperative program.	None; once the data are delivered, no reports are due, nc is the investigator obligated to seek, nor NASA to provide, data analysis funds.
ANTICIPATED SCIENTIFIC IMPACT AND PUBLIC AWARENESS OF SOLICITED INVESTIGATIONS	Major results expected leading to a paradigm shift in the field of study worthy of "front page" exposure in major news venues; science results released through the archived literature and papers at scientific meetings.	Moderate to minor results anticipated in both aspects; science results are expected to be published in the archived literature and given at scientific meetings, with only occasional results of major public interest.	Moderate to major; papers and publications at meetings expected depending on nature of activity.	Minor in both aspects; publication of results is desired but not guaranteed since NASA funding for data analysis is not assured.
TYPES OF AWARDS USED FOR SELECTED NON-GOVERNMENT ORGANIZATIONS (*Awards to U.S. Government agencies are by transfer of funds; selections of non-U.S.*	Almost always by way of a contract since defined "deliverables" are required (e.g., flight hardware and/or participation in mission operations); in rare instances a Cooperative Agreement might be used.	Almost always grants for non-profit institutions and contracts for for-profit organizations; however, contracts may be specified if defined deliverables are anticipated, e.g., for a technology test	Cooperative Agreement that specifies a close working relationship between the recipient and NASA for the selected activity; deliverables from either side may be specified.	Letters of selection only that specify NASA's intent to provide data.

investigators are no-exchange-of-funds)		program.		
SIGNATORY FOR SOLICITATION	Always the OSS Associate Administrator (AA), although cognizant OSS Division Director(s) may also sign at discretion of AA.	Usually the cognizant Division Director(s) although AA may sign if solicitation is OSS-wide and/or advertises a high-visibility program.	Same as for the NRA.	The cognizant OSS Division Director.
FORMULATION & TENDERING OF A RECOMMENDA-TION FOR SELECTION	The AO's Program Scientist, based on categorization of proposals and as vetted and approved by the OSS Steering Committee.	The NRA's Program Officer, with no other additional review unless specified by the Selection Official	Same as for the NRA.	Same as for the NRA.
SELECTING OFFICIAL OF SOLICITATION	The OSS Associate Administrator (AA), unless delegated to the cognizant science Division Director (DD); if the AA, he/she may solicit advice from DD's and/or other Code S staff as desired.	Usually the cognizant OSS DD (although may be the OSS AA if he/she signed).	Same as for the NRA.	The cognizant OSS Division Director.
TYPICAL CHARACTERISTICS OF EDUCATION AND PUBLIC OUTREACH (E/PO) ACTIVITIES	Always required at 1-2% of total of each proposed investigation for a stand-alone activity and/or for participation in a mission-wide E/PO program.	Optional as may be proposed by selected PI's up to ~15 $K/yr for duration of parent award ; PI's from same institution may propose joint activity.	Typically the same as that for the AO.	Since there is no funded award, the option to propose for an E/PO activity not offered.
	Usually quite likely,	Usually not common	Unlikely if at all, depending	Same as for the NRA.

POSSIBLE INVOLVEMENT OF NON-U.S. PARTICIPANTS IN PROPOSED INVESTIGATIONS	although Principal Investigator organizations occasionally may be restricted to U.S. only.	unless program involves a joint U.S./non-U.S. activity such as a data analysis program for a co-sponsored mission.	on nature of activity; many CAN's eligible only for U.S. institutions.	
DELIVERABLES TYPICALLY REQUIRED OF SELECTED PARTICIPANTS	• For a space flight program: experiment hardware, software, participation in mission operations, data analysis & publication, and E/PO activities. • For Participating Scientists: duty during mission ops, E/PO, data analysis, & publication.	For a grant, virtually none other than a Yearly Progress Report as a perquisite for the next funding supplement, and a Final Report at the end of the award period; for a contract, deliverables may be required.	May be extensive, involving hardware, software, and/or research and E/PO activities by involved personnel depending on nature of joint NASA/investigator activities.	None.
CONTROLLING LEGAL AUTHORITY BY WAY OF NASA FEDERAL ACQUISITION REGULATIONS (FAR) SUPPLEMENT (NFS)	A type of Broad Agency Announcement (BAA) specifically defined by NFS 1835.016, *Broad agency announcements*, and described in detail by NFS 1872, *Acquisition of Investigations*.	A type of BAA specifically defined by NFS 1835.016 and described in detail by NFS 1835.016-71, *NASA Research Announcements.*	A BAA defined by NFS 1835.016, as "(C) Other forms of announcements approved by the Associate Administrator for Procurement;" no other reference in NFS.	None, since funding is not involved; this type of solicitatio was invented by OSS to competitively distribute data from operating satellites for which data analysis funds do no exist.
APPLICABLE ISO 9000 OFFICE WORK INSTRUCTIONS (OWI'S)	HOWI18310–S019: "*Announcement of Opportunity (AO) for Science Flight Missions*" and	HOWI18310–S018: "*NASA Research Announcement (NRA) for R&A Investigations*"	None; however, the OWI's for NRA's may be used for guidance for the CAN processes.	None; however, OWI S018 for NRA's may be used for guidance.

	HQOWI17100–I003: *"Support of NASA Research Opportunities."*	and HQOWI17100–I003: *"Support of NASA Research Opportunities."*		
QUALITY RECORDS (QR'S) REQUIRED BY ISO OFFICE WORK INSTRUCTIONS (OWI'S)	Many required; files of all AO QR's maintained by OSS Code SP Management Support Specialist.	A few required, kept jointly by cognizant sponsoring OSS science Division and OSS Code SP Management Support Specialist.	None since no there is no applicable ISO OWI's; however, records comparable to those for NRA's should be kept.	None since no there is no applicable ISO OWI's; however records comparable to those for NRA's should be kept.
TYPICAL SIZE OF ANTICIPATED PROPOSALS	For flight programs, up to a hundred pages for all required parts; for Participating Scientists, a size typical to those for an NRA.	Body of proposal typically limited to 15 pp plus ancillary information for a total of 25-30 pp.	Can range from modest, comparable to that for an NRA, to extensive, comparable to that for an AO.	Typically small, as little as a few pages, and may require submission through the Web directly to NASA.
LOCATION OF GUIDANCE FOR WRITING PROPOSALS	Entirely contained in the solicitation itself, usually in an Appendix.	Provided in *NASA Guidebook for Proposers Responding to a NRA* incorporated by reference in the solicitation; exceptions only noted Clearly in *Summary of Solicitation* of NRA.	Entirely contained in the solicitation itself, usually in an Appendix, or may use the *NASA Guidebook for Proposers Responding to a NRA* by incorporation by reference.	Entirely contained in the solicitation itself, usually in an Appendix or at a separate Web site.
TYPICAL NATURE AND EXTENT OF PEER REVIEW OF	Very extensive for flight missions, involving detailed Science and Technical-Management-Cost (TMC) reviews; for	Usually a science panel only, although may be augmented with mail-in reviews and/or TMC reviews	Typically the same as for an NRA, depending on breadth of solicited investigations.	Typically only a science panel, but augmented by a operations panel to ensure that requested data can be provided by mission

SUBMITTED PROPOSALS	Participating Scientists: similar to that for the NRA.	(the latter especially for technology research).		
TYPICAL ELAPSED TIME FROM RELEASE OF SOLICITATION THROUGH DATE OF SELECTION	5-8 months based on number and complexity of proposals, plus requirement for separate Categorization and Steering Committees and a Selection Meeting with the OSS AA	3-4 months; may be longer due to large number and/or complexity of proposals, the need for TMC reviews, and/or a delay in selection owing to late passage of NASA budget.	3-4 months; may be longer due to large number and/or complexity of proposals, the need for TMC reviews, and/or a delay in selection owing to late passage of NASA budget.	2-3 months; may be longer due to large number and/or complexity of proposals.
NATURE OF DEBRIEFING OFFERED TO NON-SELECTED PROPOSERS	Extensive and usually in person; for flight investigations, involves science as well as TMC and may last several hours.	May be oral by phone (~15 min.) or by sending a copy of the written peer review (provided that panel was advised of intent to mail).	Same as for an AO or an NRA depending on breadth of solicited investigations.	Orally or by way of a copy of written peer review.

APPENDIX A

CANONICAL OUTLINE FOR AN ANNOUNCEMENT OF OPPORTUNITY (AO)*

*per NASA Federal Acquisition Regulations (FAR) Supplement (NFS) 1872, Part 705

1.0 DESCRIPTION OF THE OPPORTUNITY

Provide an executive summary of science objectives and program architecture.

2.0 SCIENCE OBJECTIVES

Describe in detail the science objectives, using reference to strategic plans, Science Working Group reports, etc., as may exist and be appropriate.

3.0 BACKGROUND

Discuss and reference strategic plans, precursor activities, etc., as appropriate, to provide anyone not familiar with the solicited program with a thorough working knowledge of its precedents.

4.0 PROPOSAL OPPORTUNITY PERIOD

State as appropriate, that the solicitation has:

(a) a single due date for proposals; /OR/

(b) an initial proposal due date followed by an open period up to some cut-off date or the exhausting of resources, whichever comes first; /OR/

(c) may allow up to three specific due dates for proposals (rarely used).

5.0 REQUIREMENTS AND CONSTRAINTS

Discuss at least the following items:

(a) Technical, programmatic, cost, and/or schedule requirements and constraints (*may be provided through an ancillary Program Information Package (PIP*)).

(b) Available Government resources (*e.g., mass or volume constraints; use of existing hardware; cost and schedule limitations*).

(c) "Other" requirements and constraints (*e.g., Education/Public Outreach (E/PO), Small and Disadvantaged Business (SDB), Safety and Quality Assurance (S&QA), Mission End-of-Life (EOL)*, etc.*).

(d) Special instructions for proposals involving non-U.S. organizations; and

(e) Special instructions for providing cost estimates of domestic proposals.

** Note: For a mission whose spacecraft and ops will be provided by NASA, an EOL plan is provided in the AO as a constraint on the proposer, whereas if the proposer provides the entire mission (e.g., the Explorer program) a tentative EOL plan is specified as a requirement for the proposal for evaluation by NASA.*

6.0 PROPOSAL SUBMISSION INFORMATION

Discuss at least the following items:

(a) Preproposal Activities (*e.g., Notice of Intent to propose; Preproposal Conference; Web posting of Q&A's*)
(b) HQ Point of Contact for questions about the AO
(c) Proposal Format
  (1) Structure of proposal (*e.g., content; number of volumes, binding, style, etc.; note: details for complex proposals are put here o, most typically, deferred to an Appendix*);
  (2) Requirement for PI and authorizing institutional signatures;
  (3) Number of copies of proposal to be submitted; and
  (4) Address for submittal of proposal

7.0 PROPOSAL EVALUATION, SELECTION, AND IMPLEMENTATION

Discuss at least the following items:

(a) Evaluation and Selection Procedures
(b) Evaluation Criteria (*sample; customize as appropriate*)
  - Science and technical merit
  - Management
  - Cost realism and reasonableness (*absolute size of "cost" is usually reserved for use as selection discriminator*)
  - "Other" as appropriate (*e.g., E/PO, SDB, S&QA, EOL, etc.*)

(c) Plans for Implementation (*e.g., location of Project Office; approximate date(s) of kick-off meeting for next stage(s) of activities*)
(d) Opportunity for debriefing of proposers

8.0 SCHEDULE OF SOLICITATION

• Release of AO	R (M/D/Y)
• Preproposal Conference (if applicable)	R + ~2 wk
• Notice of Intent to Propose	R + ~30 d
• Proposal Deadline	R + ~90 d = P
• Deadline for non-U.S. proposers letters of endorsement	P + ~30 d
• Target for Announcement of Selections	P + 4 to 5 m = S
• Initiate post-selection activities (as applicable)	S + ~1 m

9.0 CONCLUSION (*text below is illustrative only; customize as appropriate*)

"The ***Name Of Program*** represents an exciting and important element of the future program for NASA's Office of Space Science that is expected to significantly advance our knowledge about ***program objective(s)*** . In addition, this program is expected to generate excellent opportunities to enhance K-12 education opportunities and in general engage the public in the excitement of space scientific research. NASA invites both the U.S. and the international science personnel and institutions to submit proposals in compliance with the provisions of this Announcement of Opportunity."

List OSS Associate Administrator and the appropriate OSS Division and Program Directors for signature (note: the AA always signs an AO).

First/Initial/Last Name
Associate Administrator
Office of Space Science

First/Initial/Last Name
Director
Astronomy and Physics Division

First/Initial/Last Name
Director
Sun-Earth Connection Division

First/Initial/Last Name
Director
Solar System Exploration Division

First/Initial/Last Name
Director
Mars Program Office

****

APPENDICES

Appendix A. *"General Instructions and Provisions," (from NFS 1872)*

Appendices B, C, …… *as appropriate.*

APPENDIX B

CANONICAL OUTLINE FOR AN OFFICE OF SPACE SCIENCE NASA RESEARCH ANNOUNCEMENT (NRA)*

*per NASA Federal Acquisition Regulations (FAR) Supplement (NFS) 1835.016-70

SUMMARY OF SOLICITATION

1.0 DESCRIPTION OF THE OPPORTUNITY (*executive summary of NRA*)

(a) Introduction to and background of solicitation
(b) Brief statement of research objectives with reference to Appendix A for details

2.0 INSTRUCTIONS FOR PREPARATION/SUBMISSION OF PROPOSALS

This section should begin with the following block of material:

"The policies and procedures for the preparation and submission of proposals, as well as those for NASA's review and selection of proposals for funding, are now presented in a separate document entitled *Guidebook for Proposers Responding to NASA Research Announcements — 200XX* (abbreviated as *NASA Guidebook for Proposers*) that is accessible by opening the single Web site portal for the submission of proposals to any of the NASA program offices at the World Wide Web URL http://research.hq.nasa.gov, and linking through the menu item "Helpful References," or by direct access at URL http://www.hq.nasa.gov/office/procurement/nraguidebook/ .

"By reference, this *NASA Guidebook for Proposers* is hereby incorporated into this NRA, and proposers are responsible for understanding and complying with its procedures before preparing and submitting their proposals. Proposals that do not conform to its standards may be declared noncompliant and returned without review. The required proposal *Budget Summary* form is now incorporated into the *Cover Page/Proposal Summary* that is accessed from the Web (see Summary Information below). After the requested data are entered, both of these forms are printed for submission with the required hard copies of the proposal."

3.0 OSS EDUCATION AND PUBLIC OUTREACH PROGRAM

Coordinate with the Code S liaison for Education and Outreach to develop an E/PO program appropriate for the research program that is being solicited.

4.0 ITEMS OF SPECIAL IMPORTANCE FOR THIS NRA (*as required*)

5.0 SUMMARY INFORMATION FOR THIS NRA (*prototype as below*)

• Program Alpha-Numeric Identifier	NRA **YY**-OSS-**NN**
• Date of NRA Issue	**AAA**, 20**YY**
• Access to text	Link through the menu listings *Research Solicitations* → *Current (Open) Solicitations* starting from the OSS home page at http://spacescience.nasa.gov.
• Requirements for preparation and submission of proposals (including default page limits)	"*NASA Guidebook for Proposers Responding to a NASA Research Announcement (NRA)*" at URL http://www.hq.nasa.gov/office/procurement/nraguidebook/
• *Notice of Intent (NOI) to Propose* (encouraged but not required) :	
- Desired Due Date	**BBB**, 20**YY**
- Web site for electronic submission	- Open appropriate menu listing at http://proposals.hq.nasa.gov (Help Desk by E-mail to proposals@hq.nasa.gov)
- Late submission (up to 15 days prior to Proposal Deadline)	Submit information specified in Section 3.1 of *NASA Guidebook for Proposers* by E-mail to proposals@hq.nasa.gov
• *Cover Page/Proposal Summary* and *Budget Summary*	
- Deadline	**CCC**, 20**YY**; print completed items from Web site http://research.hq.nasa.gov
- Web site for electronic submission	- Same as above (open for submissions starting ~ 45 days prior to Proposal Deadline); Help Desk by E-mail to proposals@hq.nasa.gov)

• Submission of Printed Proposal (including printed *Cover Page/Proposal Summary* and *Budget Summary*):	
- Required number	Signed original proposal plus 15 copies (*default number; may be increased or decreased as appropriate).*
- Deadline	4:30 p.m. Eastern Time, **CCC**, 20**YY**
- Address for submission by U.S. Postal Service, commercial delivery, or private courier	**Name of NRA** Office of Space Science NASA Peer Review Services Suite 200 500 E Street, SW Washington, DC 20024 Telephone: 202/479-9030
• Selecting Official	Director **(or S/Associate Administrator)** Name of OSS Division Office of Space Science
• Announcement of selections	Goal: 150 days after Proposal Deadline or 30 days after passage of NASA Fiscal Year 20**YY** budget, which ever occurs last.
• Initiation of funding for new awards	Goal: 46 days after Announcement of Selections
• Further information	**Dr./Mr./Ms. Program Executive** **Name of OSS** Division Code S**?** Office of Space Science National Aeronautics and Space Administration Washington, DC 20546-0001 Phone: (202) 358-**XXXX** E-mail: **name.surname**@hq.nasa.gov

Close with a brief concluding remark, such as:

"The interest and cooperation of the U.S. and international space science research communities in responding to this NRA are encouraged and appreciated."

List OSS Associate Administrator <u>and/or</u> appropriate Division Directors for signature; note that under current practices, the AA only rarely signs an NRA.

First/Initial/Last Name
Associate Administrator
Office of Space Science

First/Initial/Last Name
Director
Astronomy and Physics Division

First/Initial/Last Name
Director
Sun-Earth Connection Division

First/Initial/Last Name
Director
Solar System Exploration Division

First/Initial/Last Name
Director
Mars Program Office

First/Initial/Las Name
Director
Prometheus Project Office

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APPENDIX A

<u>DESCRIPTION OF PROGRAM OPPORTUNITY</u>

APPENDIX C

GENERIC CONCURRENCE CYCLE CIRCULATION SHEET AND INSTRUCTIONS

(Note: The following form is not to be reproduced; it is provided here for information only; to be issued only by the Deputy Associate Administrator for Science, Office of Space Science; see FAQ.1 in Appendix D for the justification for each signatory.)

****

OFFICE OF SPACE SCIENCE
(designate as appropriate)
ANNOUNCEMENT OF OPPORTUNITY
NASA RESEARCH ANNOUNCEMENT
COOPERATIVE AGREEMENT NOTICE
"Name of Announcement"

S/Deputy Associate Administrator for Science – *name* **Date**

Sx/Program Officer – *as assigned* **Date**

As appropriate, provide for OSS science Division concurrence(s):

SE/Director, Solar System Exploration Division – *name* **Date**

If solicitation is for a Mars program, include the following in addition to SE/Director:

SM/Director, Mars Exploration Office – *name* **Date**

SN/Director, Project Prometheus Program Office – *name* **Date**

SS/Director, Sun-Earth Connection Division – *name* **Date**

SZ/Director, Astronomy & Physics Division – *name* **Date**

S/Deputy Associate Administrator for Programs – *name* **Date**

S/Director, Strategic & International Planning – *name* **Date**

N/Code S Liaison for Education & Outreach – *name* **Date**

IS/Director, Space Science & Aeronautics Division, Office of External Relations – *name*	**Date**
H/Office of Procurement	**Date**
GK/Office of General Counsel – *name*	**Date**
SP/Program Support Specialist – *name*	**Date**
SB/Management Support Specialist – *name*	**Date**
S/ Deputy Associate Administrator for Science – *name*	**Date**

*** Special Instructions**

- **Only S/Deputy Associate Administrator for Science has the authority to issue or alter this sheet; he/she will issue a customized version of it based on the type of solicitation involved and its sponsoring OSS science Division.**
- **After the first two signatures are obtained, parallel concurrence may be solicited from all designated offices up to Code G. If such parallel action is initiated the Program Officer is responsible for the distribution, collection, and collation of all individually signed sheets and comments for provision to Code G; only a fully amended/corrected copy of the solicitation is to be forwarded to Code G.**
- **Regardless of whether parallel concurrence is sought or not, a preliminary version may be given to SP/Program Support Specialist at the beginning of the cycle to expedite proof reading for Government Printing Office standards.**
- **Substantive changes at any one step may require reconcurrence by prior concurees, as appropriate.**
- **All specified changes and final editing must be made before final submission to SP/Program Support Specialist.**
- **All changes specified by the SP/Program Support Specialist must be made, and all embedded Web links (i.e., URL addresses) must be checked for accuracy and accessibility before submission in final hardcopy and as an electronic Word file to SB/Management Support Specialist.**
- **After final inspection for completeness and editing by S/ Deputy Associate Administrator for Science, the SB/Management Support Specialist will secure the authorizing signature by the designated selection official, initiate the FBO announcement process, and transmit the final electronic file to the NASA Proposal Review Service (NPRS) contractor.**
- **The earliest date for the release of a document is 23 days after the final authorizing signature by the Selection Official (eight for processing and 15 for posting in the Federal Business Opportunities (FBO) website as required by law); 10 days of this period is required by NPRS for conversion into Web formats.**
- **The Program Officer is responsible for inspection and approval of the final document on the Web page for OSS Open Research Solicitations.**

OFFICE OF SPACE SCIENCE
NPG 7120.5 CERTIFICATION FOR RELEASE OF SOLICITATION

This Certification verifies that the NASA research solicitation, entitled,
Announcement of Opportunity / NASA Research Announcement / Cooperative Agreement Notice:

_____

sponsored by the Office of Space Science, NASA Headquarters, is hereby approved for pre-release announcement in the *Federal Business Opportunities* (FBO). In accordance with Procurement Information Circular (PIC) 99-6, dated March 26, 1999, this solicitation (initial as appropriate):

_____(1) is not in support of a program or project that is subject to the requirements of NPG 7120.5;

-or-

_____(2) is in support of a program or project that is subject to the requirements of NPG 7120.5, and –

_____all NPG 7120.5 required documentation is current and approved;

-or-

_____authority to release the solicitation without the required documentation has been granted by the chair of the Governing Program Management Council (GPMC) or designee.

CONCURRENCE:

_____ _____
Name Date
S/Deputy Associate Administrator for Programs

APPROVAL:

_____ _____
Name Date
S/Associate Administrator for Space Science

*** Special Instructions**

- **Only S/Deputy Associate Administrator for Science has the authority to issue or alter this sheet, which is required by the SB/Management Support Specialist in order to submit the FBO notice to the Procurement Office at GSFC for transmittal to the FBO office.**

APPENDIX D

FREQUENTLY ASKED QUESTIONS
(THOSE ACTUALLY ASKED, AS WELL AS THOSE THAT SHOULD HAVE BEEN ASKED)

FAQ.1 I'm told that the Concurrence Sheet for a solicitation requires a dozen or more signatures and may take three or more weeks to complete. Are all of these concurrences really needed before a solicitation can be released?

Ans.: Yes.

Why?

Ans.: At the most basic level a solicitation must be appropriately vetted, first, within the program code that has responsibility for the execution of the solicited activity, and second, by the other HQ codes responsible for ensuring its compliance with the Agency's international policies and its procurement regulations as stated in NASA Federal Acquisition Regulations (FAR) Supplement (NFS). Concerning the first of these groups, the following signatories are required for the stated reasons:

- S/Deputy Associate Administrator for Science (DAAS): The DAAS is effectively the OSS "Chief Scientist" and also serves as the Chairman of the Space Science Steering Committee (which is the penultimate step in the selection process for AO's). Therefore, the DAAS has special and vital concern that a solicitation be as clean and free of issues as possible (see §2.1 in Section 2 of this Handbook). He/she ensures that a solicitation is sufficiently mature to justify its review in the formal Concurrence Cycle, especially for the program offices outside of Code S. In addition, because the DAAS directly serves the Associate Administrator, he/she is in a position to ensure that the issuance of any particular solicitation is both warranted and timely, and to clear up any remaining top-level questions as may remain (e.g., certainty of budget support, compliance with the OSS program strategy and priorities, the role and/or verification of any non-U.S. participants in the program, and the identification of the appropriate Selecting Official).
- Sx/Program Officer (i.e., the Program Scientist or Program Executive): This person is responsible for the solicitation and managing the process through to selection of proposals. He/she almost always also the author of solicitation itself and may be a Program Scientist or Program Executive from one of the three OSS Science Divisions (Codes SE, SS, or SZ) or two OSS Program Offices (SM or SN)
- Sx/Directors of the OSS Science Divisions (Codes SE, SS, and SZ) and/or Program Offices (SM and SN): Since program management within OSS is vested in one or more of its three Science Divisions and/or two Program Offices, the appropriate Director(s) must necessarily be cognizant of the

contents of a solicitation for which they will ultimately be responsible for implementation. The DAAS determines which Directors are appropriate to list for any given Concurrence Cycle and tailors the sheet accordingly. For some solicitations this may be only one Division or Office, whereas the yearly omnibus "ROSS" NRA involves all five.

- S/Deputy Associate Administrator for Programs (DAAP): The DAAP verifies that appropriate measures have been taken to ensure that the solicited OSS program will be carried out in conformance with the *OSS Management Handbook* and NASA Policy Guide (NPG) 7120, *"NASA Procedures and Guidelines*." The DAAP also signs the certification needed to allow publication of the synopsis of the solicitation in the *Federal Business Opportunities* Web site as required by law for all types of solicitations for which a contract might be used as a funding award (see also FAQ.8 below).
- Director, Strategic & International Planning: This person is responsible for oversight of all international collaborations into which OSS might enter by virtue of selections through its research solicitations. Therefore, it is very important that he/she is fully informed of all solicitations and their potential for future international agreements, and coordinates as necessary with the OSS Associate Administrator as well as the HQ Office of External Relations (see Code IS further below).
- S/Code N Liaison for Education & Outreach: This person is assigned to Code S from the HQ N/Office for Education to ensure that every solicitation issued provides for an appropriate education and public outreach program. Although a number of relatively well-developed "models" for OSS E/PO programs exist, frequently these have to be fine tuned or otherwise tailored to the solicitation under consideration. Therefore, the cognizant Program Officer is advised to consult with this person well in advance of the formal Concurrence Cycle to ensure that such a program is planned and described.
- IS/Director, Space Science & Aeronautics Division, Office of External Relations: This office is responsible for developing all formal agreements with non-U.S. organizations or governments for participation in OSS programs. Therefore, it is imperative that it has the chance to review solicitations to ensure that established and required NASA policy is properly included and stated and to plan ahead for the possible work load of agreements.
- H/Office of Procurement: Code H reviews all solicitations to ensure that they conform with the applicable policies as stated in NASA Federal Acquisition Regulations (FAR) Supplement (NFS). All comments from this Office must be formally addressed before submission to Code G.
- GK/Office of General Counsel: Review by General Counsel is required to ensure that the solicitation is fully legal regarding NFS and all other applicable Federal codes. All comments by the previous concurrees must be addressed and incorporated prior to submitting the solicitation to Code G; that is, General Counsel will only review the absolutely final version.

- SP/Program Support Specialist: This person reads the solicitation to check for overall ease of comprehension and to ensure that it conforms to the standards of the Government Printing Office (GPO), in order to help ensure that only thoroughly and professionally edited documents are issued.
- SB/Management Support Specialist: This person logs in the now fully edited and approved solicitation and prepares it for final signature by the appropriate OSS approving official. He/she also assigns the solicitation its appropriate sequential alpha-numeric identifier and alerts the NASA Peer Review Services (NPRS) contractor of its impending readiness for release. After final signature, this person negotiates with NPRS for the earliest possible release date taking into account the required FBO cycle (see FAQ.2 below) and the NPRS contractually allowed time for conversion of the text for release on the Web. He/she informs the Program Officer of this date so that the proposal due date may be finally determined for insertion into the final document.
- S/Deputy Associate Administrator for Science (DAAS): The DAAS gives the document one last examination to ensure that all issues raised during the Concurrence Cycle have been resolved and that no other issues have arisen that might mitigate against its release. The DAAS signature is a "go ahead" flag to the SB/Support Specialist that final processing is approved leading to its release.

FAQ.2 Why does the Federal Business Office (FBO) cycle take so long?

Ans.: Because it just does. It's a combination of the15 days required by law for actual posting and the eight days of processing time by the GSFC Procurement Office and the FBO office. Even if this activity were not required (and it is not for CAN's), once weekends are factored in, the FBO cycle only takes about an extra week beyond the 10 working days contractually allowed for the NASA Peer Review Service to convert a document for the Web.

FAQ.3 Why can't we effectively short circuit the 23-day FBO cycle by releasing the required FBO announcement in advance of the actual completion of the Concurrence Cycle, for example, once it has cleared Code G?

Ans.: There are two dimensions to this issue, one rather formal and one pragmatic:

The formal reason is that the route to the FBO is through the GSFC Procurement Office, and they act as keepers of the gate to ensure that we do not inadvertently or prematurely release solicitations that are not appropriately reviewed and authorized. The only way they have of knowing this is by our being able to fax them copies of the signed 7120 Certification (see FAQ.8 below), and by our verbal assurance that the Concurrence Cycle is complete and that the solicitation has been signed.

The pragmatic reason is that until the very last few days of the Cycle it remains difficult to predict when the final signature will be obtained and, therefore, to predict when the document can be ready for release. Technically an FBO notice can be posted for more than the legally required 15 days and can read that the a solicitation "…will be released on or about…" some date. The problem is that if one guesses too conservatively, then it's ready for release before that date and time is lost, whereas if one guesses too optimistically then it's posted after the advertised date and phones start to ring from interested proposers.

The bottom line is that, yes, although one can occasionally slice a few days off the last few stages of the Concurrence-plus-FBO activities, it takes a lot of coordination and almost hourly attention to who is doing what, when.

FAQ.4 Why does the Concurrence Cycle contain a separate sheet that requires identification of all the places where international cooperation or involvement is mentioned?

Ans.: As OSS solicitations have gotten increasingly longer and more complicated, their review has become increasingly difficult and time consuming, requiring a detailed reading of perhaps fifty or more pages to find just a few references to international policies and procedures as may apply. Therefore, this *International Policy Index* sheet aids anyone on the Concurrence Cycle to quickly find all the relevant text. It is to be compiled by the Program Officer in charge of the solicitation as the last step before initiating the Concurrence Cycle. Since this person is almost always also the author of the solicitation, compiling this *Index* should not be difficult to do.

FAQ.5 Why all the nit-picking about punctuation, formatting, and organization of our solicitations? After all, we're not trying to win a writing contest.

Ans.: The formal answer is that even though NASA now releases all documents through the Web, in fact the standards of the Government Printing Office (GPO) still apply. The various rules and guidelines in the *Handbook* are consistent with these standards – no less and no more. Even if these standards did not exist, however, it behooves NASA as a Federal agency to release documents that are in compliance with accepted professional standards of grammar, punctuation, syntax, and organization, consistent with our expectation of receiving proposals that meet the same professional standards. The informal answer is that's what our "customers" expect, it's the professional thing to do, and last, but hardly least, a clear, well-written solicitation is much more likely to result in proposals that are clearly directed to its objectives.

FAQ.6 Who signs a given solicitation, and is he/she always the Selecting Official?

Ans.: The NASA FAR Supplement (NFS) 1872 specifies that for AO's the Associate Administrator (AA) is the authorizing as well as the Selecting Official unless he/she otherwise delegates that authority. The NFS is strangely silent about other types of solicitations (i.e., NRA's and CAN's) but it may be inferred that the AA is the Selecting Official unless otherwise delegated. In the Office of Space Science, the following practices are generally followed (see §4 in this Handbook for the definitions of the types of solicitations):

Type of Solicitation	**Authorizing Signatory**	**Other Optional Signatories**	**Selecting Official**
Announcement of Opportunity (AO)	Associate Administrator (AA) for the Office of Space Science (OSS)	OSS science Division Director(DD's) having program authority for the solicited activity.	The OSS AA, who may ask for advice and consent from the programmatically involved DD's, as well as the OSS Deputy AA's for Science and for Programs.
NASA Research Announcement (NRA)	By delegation of the AA, the OSS Science DD(s) who have program authority for the solicited activity; however, the AA may elect to be the sole signatory for NRA's that address OSS-wide programs and/or particularly high visibility activities.	If the AA is signatory, the other OSS Science DD(s) having program authority for the solicited activity.	The OSS AA if he/she signs the NRA; otherwise the OSS science DD(s) with program authority for the solicited activity.
Cooperative Agreement Notice (CAN)	Same as for the NRA.	Same as for the NRA.	Same as for the NRA.
NASA Announcement (AN)	Same as for the NRA.	Same as for the NRA.	Same as for the NRA.

FAQ.7 Who/how/when is the actual release date determined?

Ans.: Once the Concurrence Cycle is finished, the OSS Management Support Specialist (MSS) with cognizance for the management of OSS solicitations secures the final authorizing signature by forwarding the document to the appropriate signatories (see FAQ 6). Once the appropriate signatures are obtained, the MSS consults with the solicitation's Program Officer (Scientist or Executive) and the NASA Peer Review Service (NPRS) contractor to determine: (i) the earliest release date taking into account the 23 calendar day FBO cycle and avoidance of weekends and holidays, and (ii) the proposal due date, which is almost always ~90 days after the release date (avoiding weekends, holidays, and Mondays). The MSS then assigns the appropriate, sequential alpha-numeric identifier for the solicitation (e.g., AO 02-OSS-03, interpreted as meaning that in calendar year 2002 this OSS AO is the 3rd one). The MSS then immediately sends the FBO announcement to the GSFC Procurement Office, forwards an electronic copy of the final document (with the appropriate identifier, and release and due dates) to NPRS for conversion for the Web, and also arranges for the printing of copies for peer review purposes and for mailing to the NASA Centers (no other mailing is made, and the availability of hard copies is not offered to the community at large).

FAQ.8 What is this "7120 Certification" thing all about during the Concurrence Cycle?

Ans.: OK, you asked, so take a deep breath and continue reading. Procurement Notice (PN) 97-28, issued Mar. 26, 1999, and found at URL http://www.hq.nasa.gov/office/procurement/regs/pn97-28.html, specifies that

> "…no affected [procurement] solicitation is released prior to the approval of key programmatic documentation required by NASA Procedures and Guidelines (NPG) 7120.5, [entitled] *NASA Program and Project Management Processes and Requirement*. This PN also prohibits release of affected solicitations until the required approvals have been obtained or authority to proceed without the required documentation has been granted by the Chair of the Governing Program Management Council or designee."

This requirement is further stated in Procurement Information Circular (PIC) 99-6 (http://www.hq.nasa.gov/office/procurement/regs/pic99-6.html) of the same date. The direct consequence of this policy is that the NASA GSFC Procurement Office will not forward the required announcement of a research solicitation to the FBO for the required 15-day posting without "certification" that PIC 99-6 is appropriately satisfied.

To this end, OSS generated a form entitled "*Office of Space Science – NPG 7120.5 Certification for Release of Solicitation*" that is issued by the OSS Deputy Associate Administer for Science (DAAS) along with the Concurrence Cycle sheet. This form is completed by the OSS Deputy Associate Administrator for Programs (DAAP) as part of his/her inspection of the solicitation during the Concurrence Cycle (see FAQ.1), and who then forwards it to the OSS Associate Administrator for signature. The signed Certification is returned to the OSS Management Support Specialist (see FAQ's 1 & 4) who faxes it along with the FBO notice to the GSFC Procurement Office once the solicitation is signed and the appropriate dates are established. As a general rule, the Program Officer responsible for the solicitation does not have to worry about this activity other than making sure that the OSS 7120 Certification form accompanies the solicitation as it goes to the DAAP during the Concurrence Cycle.

FAQ.9 OK, I understand that NASA FAR Supplement specifically addresses the NRA and AO processes, but it can be horrendous to read; aren't there some nice concise checklists or flow charts that can be used to lead me through the steps?

Ans.: As a matter of fact, there are. Such items are specifically provided in the *ISO 9000 Office Work Instructions* (OWI's) for NRA's and AO's, respectively. The latest and, therefore, the only official versions, may be opened from the NASA HQ ISO Web site at http://www.hq.nasa.gov/hqiso9000/library/iso9000_level_3.html, specifically under the Document Numbers:

- HOWI18310–S018: *NASA Research Announcement (NRA) for R&A Investigations*,

and

- HOWI18310–S019: *Announcement of Opportunity (AO) for Science Flight Missions*.

In addition, the Office of External Relations OWI,

- HQOWI17100–I003: *Support of NASA Research Opportunities*,

directly supports these two OSS OWI's concerning OSS proposals that may involve non-U.S. participants.

In all cases, ISO OWI's have the following outline:

1. Purpose
2. Scope and Applicability
3. Definitions
4. References
5. Flowchart (!)
6. Procedure

7. Quality Records

The really "operative" parts are Sections 5, 6, and 7. Careful adherence to the procedures as laid out in the extensive flow charts in their respective Sections 5 will ensure that no important aspects of the process are overlooked.

FAQ.10 What are the pros and cons of releasing a "Draft" version of a solicitation, and if this is done, why is a Code S Concurrence Cycle still necessary? After all, it's only a "draft."

Ans.: The pros for releasing a draft, especially for new programs that have never been solicited before, are twofold: (i) it gives the interested research community (which may include private industry) additional advance notice that a solicitation is likely to be released, and, therefore, a head start for preparing responsive proposals; and (ii) it allows for comment on aspects of the solicitation and/or program definition that the cognizant HQ Program and/or Center Project Officials may have overlooked. Both of these factors help ensure the submission of proposals that are fully responsive to the defined objectives of the program, which is always in NASA's best interests.

The major con is that the release of a draft solicitation delays the release of the final solicitation on the order of eight weeks and, therefore, delays the earliest possible Due Date for proposals. This delay nominally adds up as follows:

- Internal Code S Concurrence Cycle for Draft solicitation:	1-2 wks
- NPRS conversion of text for Web posting:	2 wks
- Period for public examination and comment:	2-3 wks
- NASA assimilation of comments and revision of text:	1-2 wks
- Total time required before start of Concurrence Cycle of Final version of solicitation:	6-9 wks

A mitigating factor to this delay is that the formal period allowed for proposal preparation may now be shortened from the canonical 90 to 75 days since it can be reasonably argued that the interested proposers will have had several months of advance notice of the solicitation and, therefore, a "head start" for the preparation of proposals.

As for the requirement for a Code S Concurrence Cycle: Just because "it's only a draft" is no excuse for releasing any less than as fully a mature and programmatically vetted a document as possible. It's the professional thing to do and avoids the possible accusation of "bait and switch" should major changes be made in the final solicitation that could have been foreseen at the time of the draft. Last and by far not least, an internal Concurrence Cycle helps ensure that everyone in Code S who should know what's going on in fact does know, which is especially important for the personnel who facilitate its final release

One last point: Just because *"it's only a draft*" is never an excuse for avoiding consultation with Codes G/General Counsel, H/Procurement, and/or I/External Relations should the solicitation possibly contain any unusual issues or deviations from normal policies and procedures. Such advance negotiation of potential issues helps ensure a smooth Concurrence Cycle of the final version.